# 406MHz COSPAS-SARSAT Emergency Beacon, MT400 Series EPIRB

# Technical Service Manual

| | |
|---|---|
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# 1. APPLICABILITY

This document applies to the following models:

- MT400 [manually activated EPIRB, $LiSO_2$ batteries]
- MT401 [manually & water activated EPIRB, $LiSO_2$ batteries]
- MT403 [manually & water activated EPIRB, $LiMnO_2$ batteries]
- MT403G [manually & water activated EPIRB + integral GPS, $LiMnO_2$ batteries]
- MT401FF [float-free EPIRB, $LiSO_2$ batteries]
- MT403FF [float-free EPIRB, $LiMnO_2$ batteries]
- MT403FG [float-free EPIRB + integral GPS, $LiMnO_2$ batteries]

# 2. SCOPE

Service Department level maintenance is outlined within this document. A suitable skill level is assumed, as is access to common electronic and mechanical tools.

The scope of this document is limited to servicing and repair as follows:

- Inspection and performance check,
- Battery replacement, typically due to use or life expiry,
- Replacement of physical piece parts which may have been damaged or has deteriorated to a point of no longer being serviceable, and/or
- Exchange of a printed circuit card assembly that has failed in a manner not covered by the product warranty (i.e. a non-electrical failure due to leakage or physical damage only).

> **NOTE1:** Repair of the printed circuit card assembly is not possible at the distributor level; replacement of components is likely to affect module calibration. Specialist fixtures and facilities only available at the factory are required to perform a module alignment after any repair operation.

Additional servicing requirements may be imposed by other Organisations and Authorities on particular users and installations (e.g. IMO/Circ. 1039). Such requirements are outside the scope of this document and it is the responsibility of the Agent carrying out the inspection and/or service to determine which if any may apply. These requirements where applicable are always in addition to, and do not replace, any of the requirements specified within this document.

# 3. DOCUMENT REVISION HISTORY

The change history of this document is given in Table 3-1.

| Rev Date | Rev | ECO | General Description of Change |
|---|---|---|---|
| 17-Aug-2005 | A | --- | Create Document for initial comment/review. |
| 29-Aug-2005 | B | --- | Further develop detail. |
| 09-Sep-2005 | C | --- | Preliminary - Issued for Comment. |
| 19-OCT-2005 | 1 | 4669 | Released for information |
| 29-JUN-2006 | 2 | 4827 | Minor amendments, full release. |
| 14-AUG-2006 | 3 | 4827 | Apply to GPS models (3). Add GPS equipped module assembly note. Correct typographical error. |
| 09-JAN-2008 | 4 | 5338 | Amend to include new model types. Add note on leak testing |
| 02-FEB-2009 | 5 | 5649 | Amended to include replacement battery/chassis assemblies & reference to leak test fixture. |

**Table 3-1**

# 4. ASSOCIATED DOCUMENTS

Reference to the additional material identified within Table 4-1 and Table 4-2 may be required to complete some of the operations detailed within this manual.

Furthermore, from time to time Technical Service Bulletins (TSBs) may also be released. These bulletins contain information, which may be important to the continued service of specific beacons, and the instructions contained therein must be followed.

It is possible to regularly verify the Issue status and download as necessary new document releases including TSBs via the support area on the company's website. Always work with the latest versions of this and other documentation.

The company's home page web address is:

www.gme.net.au

As information access is limited to approved organisations, distributors and dealers, it is first necessary to apply for an account login. Such applications can be made online from the SUPPORT page.

| Item | Part No. | Drawing No. | Title |
|---|---|---|---|
| 1. | as PDF | 42341 | Emergency Beacon, Inspection Proforma |
| 2. | as PDF | StandComm MT400/401 | MT400 series, Material Safety Data Sheet (MSDS) |
| 3. | 310345 | 42773 | MT401 Float Free HRU Replacement Instruction Leaflet |
| 4. | 310346 | 42774 | MT401 Float Free Conversion Instruction Leaflet |
| 5. | 310218 | 42155 | MT400 series, Dealer Programming kit Instruction Leaflet |
| 6. | 310463 | 44669 | Dealer Leak Test Kit Instructions |

**Table 4-1 Internal Documents**

| Item | Ref. | Identification | Title |
|---|---|---|---|
| 1. | T2/6.01. | MSC/Circ. 1039 (or as amended) | Guidelines for Shore-based Maintenance of Satellite EPIRBs |

**Table 4-2 External Documents**

# 5. PRODUCT MAINTENANCE & SERVICE

## 5.1 Introduction

A number of service actions are identified within this manual, more than one may be applicable at any beacon service. Please familiarise yourself with all available service actions to ensure that a complete service is carried out.

Only manufacturer authorised spares and components are approved for use in carrying out the service operations contained here-in.

Access to a range of service tools is assumed, however please note some service operations also require access to specialised tools (refer Table 7-4). A dry, pressurised air source is required for leak testing.

### 5.1.1 Model Variants

Please be aware the pictorial representations shown in a particular service operation step may not always precisely depict all model variants or build revisions. In situations where this detail discrepancy is important to the actions being described, it shall be addressed by a note, alternate picture, or both.

## 5.2 Repair Matrix

The sequence of operations for each service type is given within Table 5-1. Multiple service types may be combined provided the sequence of operations is maintained.

| Para. | Nature of service | Routine inspection | Battery Replacement | Internal Repair of Fault | External Repair of Fault |
|---|---|---|---|---|---|
| 5.3.1 | Inspection | ● | ● | ● | ● |
| 5.3.2 | External Switch Mechanism | x | x | x | ● |
| 5.3.3 | Chassis Disassembly / Assembly | x | ● | ● | x |
| 5.3.4 | Cap Disassembly / Assembly | x | x | ⊙ | x |
| 5.3.5 | Battery Pack Replacement | x | ● | ⊙ | x |
| 5.3.6 | Replacement of Desiccant | x | ● | ● | x |
| 5.3.3 | Chassis Disassembly / Assembly | x | ● | ● | x |
| 5.3.7 | Leak Test | ⊙ | ● | ● | ● |
| 5.3.8 | Security Seal Replacement | ⊙ | ● | ● | ⊙ |
| 5.3.9 | Reprogramming User Information | x | ⊙ | x | x |
| 5.3.10 | Ext Labelling Replacement / Update | ⊙ | ● | ⊙ | ⊙ |

| Para. | Nature of service | Routine inspection | Battery Replacement | Internal Repair of Fault | External Repair of Fault |
|---|---|---|---|---|---|
| 5.3.11 | Produce Beacon Record | ● | ● | ● | ● |
| 5.3.12 | Transmission Test and Report | ● | ● | ● | ● |
| 5.3.13 | Packing for Return to Customer | ● | ● | ● | ● |

| KEY | |
|---|---|
| ● | This operation must be carried out |
| O | May be required depending on circumstances, refer to test criteria |
| x | Not required. |

**Table 5-1**

## 5.3 Servicing Operations

### 5.3.1 Inspection

This operation is carried out to determine if the beacon has suffered from physical or environmental abuse that will require rectification prior to its return into service. Correct electrical operation of the EPIRB is assessed.

| Step | Action |
|---|---|
| 1. | Carry out the inspections as outlined with the Emergency Beacon, Inspection Proforma Drawing No. 42341. |
| 2. | Complete the form, noting all failures. |

### 5.3.2 External Switch Mechanism

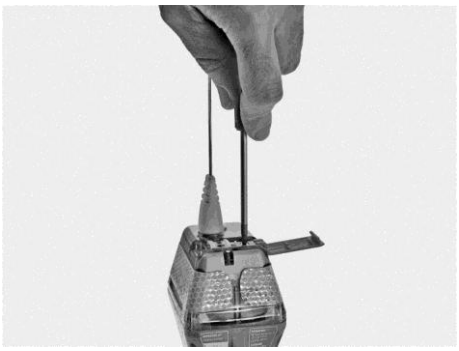
This operation is carried out when:

- Access to the leak seal screw is required.
- The switch mechanism or switch cover needs to be replaced.

**DISASSEMBLY**

For disassembly each step is to be completed in numerical order as follows:

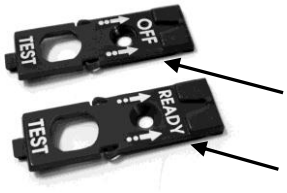
| Step | Action |
|---|---|
| 1. | Move the beacon activation switch to the ON position.<br>**Note:** IMMEDIATELY move onto and complete the next step. |
| 2. | Remove the screw then the slider track completely from the beacon. |

| Step | Action |
|---|---|
| |  |

## Assembly

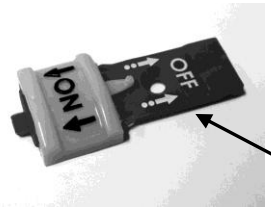
To re-assemble and/or replace components each step is to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Push the switch slider onto a slider track appropriate to the beacon model type. |




MT400 type has 'OFF'

MT401 type has 'READY'




Leave this hole exposed when fitting switch slider

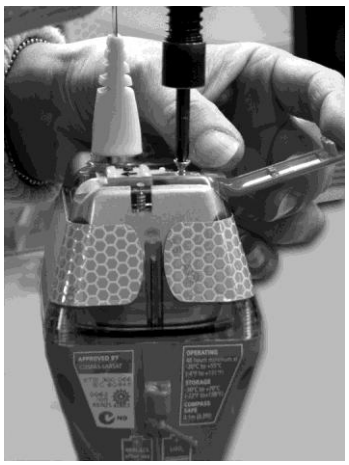
| | |
|---|---|
| 2. | Locate the switch and switch slider track so that tongue provided on that track engages into the slot provided at the front of the beacon cap. Place then hold in position a switch cover of the type appropriate to the beacon model type as shown. |

| Step | Action |
|---|---|

Yellow switch covers are fitted to yellow chassis beacons

Orange covers to orange coloured beacons

3. Place and tighten the retention screw to a torque of 50cNm.



4. Close the switch cover.

### 5.3.3 Chassis Disassembly / Assembly

This operation is carried out when:

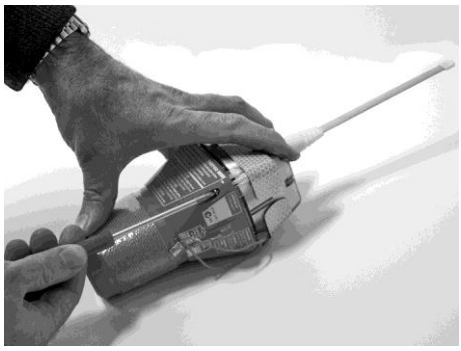
- Internal access to the beacon is required
- A mechanical repair requires the EPIRB cap and chassis to be separated.

**Disassembly**

For disassembly each step is to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Using a Philips screwdriver (Size #1) remove all four screws that retain the EPIRB cap to the lower chassis. Retain the screws for later reuse. |

| Step | Action |
|---|---|

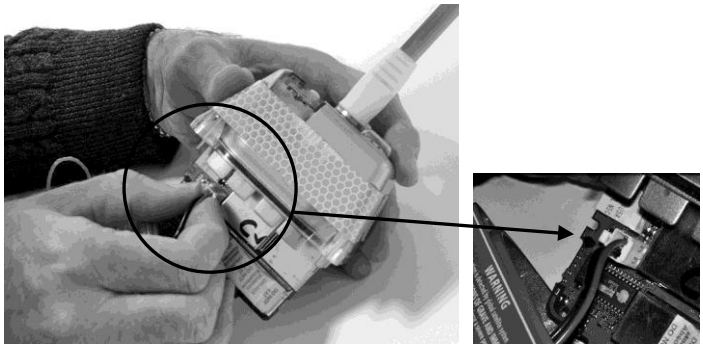


2. Firmly grasp the cap in one hand (not by the antenna), and with the other hand the lower chassis, to fully separate. The fit is reasonably tight and it may sometimes be necessary to rock the two components in respect to each other to initiate the separation process. In extreme cases, apply air pressure to the leak test hole to separate the cap from the lower chassis.

   For water activation models the water sensor interface on the circuit board may momentarily touch the metallic paint on the lower chassis during withdrawal, causing a beacon self test operation to occur.

| | |
|---|---|
| ⚠ | WARNING (Water Activated Models): If the cap and lower chassis are left only partially separated sensor interface contact with the lower chassis may cause the beacon to activate after 50s. |

3. Disconnect the batteries fly lead from the PCB by first squeezing the latch release lever on the connector, then withdrawing the connector housing vertically away from the printed circuit board.



## Assembly

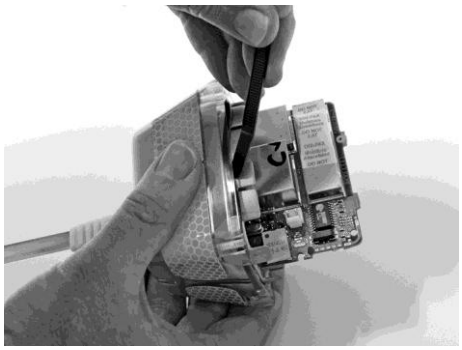
Assembly can be carried out by following the disassembly operations in reverse sequence, also noting:

| Notes | Action |
|---|---|

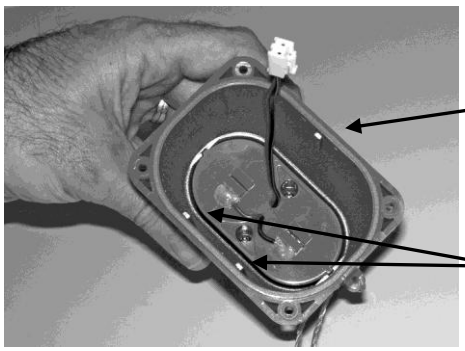
1. Inspect all components for damage and replace as necessary.
2. It is always necessary to replace the o-ring seal located in the groove around the cap with a new one prior to re-assembly of the chassis.

| Notes | Action |
|---|---|

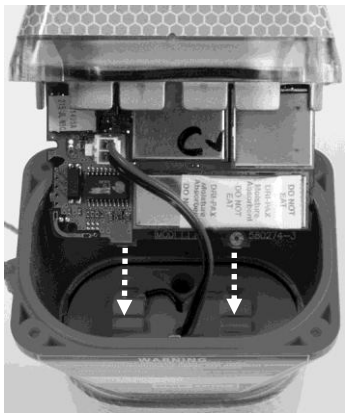
Fully seat the new o-ring in the groove. A blunt instrument may be of assistance in this matter. Whichever tool is used ensure that it does not damage the face of the o-ring seal.



3. There is only one correct orientation with which the cap and lower chassis will correctly mate. Ensure that the guides provided around the lip of the lower chassis mate with the corresponding ridges provided on the cap (2 on one long side, one on the other).




4. When mating the cap and lower chassis together ensure that the 2 tongues provided on the lower edge of the PCB module engage centrally within the respective guides provided on the top face of the battery pack. Failure to do so will result in the PCB unacceptably flexing when the cap and lower chassis are assembled together. A PCB so flexed should be considered unserviceable.



5. Tighten all 4 screws securing the cap to the chassis evenly before finally

| Notes | Action |
|---|---|
| | torquing each screw to 50cNm. |

### 5.3.4 Cap Disassembly / Assembly

This operation is carried out when:

- The external antenna and/or seal need to be replaced.
- It is necessary to remove the electronic module from the cap.
- Access to the internal switch assembly, including the sealing membrane is required.

**Disassembly**

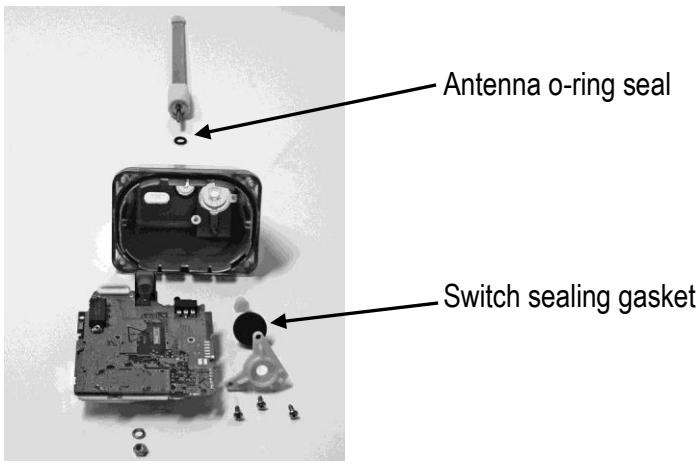
For disassembly each step is to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Use a 7mm hex driver to undo the antenna retention nut. Remove the nut and spring washer. |

| | |
|---|---|
| 2. | Separate the antenna from the cap . Discard the o-ring seal that is present at the interface between the two. |
| 3. | CAUTION: This equipment contains static sensitive componentry. Handling precautions required.<br>Carefully withdraw the PCB from the cap and place it on an antistatic surface. |
| 4. | Undo all three screws from the plate which retains the internal switch mechanism. |

| Step | Action |
|---|---|

5. Remove the retention plate, sealing gasket and plastic plunger from the cap. Discard the sealing gasket.




## Assembly

Assembly can be carried out by following the disassembly operations in reverse sequence, also noting:

| Notes | Action |
|---|---|
| 1. | Inspect all components for damage and replace as necessary. |
| 2. | Where the switch mechanism has been disassembled it is necessary to fit a new sealing gasket. |
| 3. | The sealing gasket is installed facing such that the round button protrudes through the hole in the triangular retention plate. |
| 4. | Tighten the 3 screws that hold the retention plate in place to a torque of 50cNm. |
| 5. | The o-ring fitted externally beneath the base of the antenna must be replaced with a new one. |
| 6. | Ensure that the spring washer is in place beneath the antenna retention nut before tightening to 95cNm using a 7mm socket driver. |
| 7. | During reassembly of GPS equipped models, carefully align the Helix |

| Notes | Action |
|---|---|
| | antenna protruding from the leading edge of the module with the corresponding cavity provided in the cap. |

### 5.3.5 Battery Pack Replacement

The EPIRB battery should be replaced when any of the following is evident or has occurred:

- The Battery has reached (or exceeded) it expiry date or would otherwise reach its expiry in the near term,
- The beacon has been activated or is suspected of having been activated, and/or
- The battery pack has failed or is considered suspect.

Two battery pack configurations containing cells of different chemistries are used within this range of EPIRB; they are not interchangeable between model types however.

The preferred method of replacement is through use of the applicable battery service kit; these are a complete assembly including battery pack, lower chassis, ballast and misc items.

Alternatively, per the second method, an individual battery pack can be sourced and fitted in place of the original.

⇨ NOTE: The 'yellow' battery pack (P/N 97MT403BAT) provided within the MT403BAT Service Kit, or as a separate item, is suitable for MT403 based models only. Due to electrical and mechanical incompatibility any attempt to fit this item into a MT400 or MT401 will result in diminished operational performance and probable physical damage to that EPIRBs circuit board.

**METHOD 1 (Preferred)**

Separate kits exist for the MT400, MT401 and MT403 EPIRB, refer to Table 7-3 for ordering details.

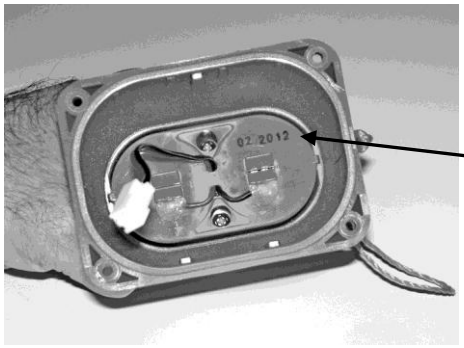
| Step | Action |
|---|---|
| 1. | Verify the model type shown on the original chassis.<br>Only the first five (5) characters are significant for the purposes of determining which service kit type is to be used (i.e. MT400, MT401 or MT403) |

*(This example is 'MT403')*

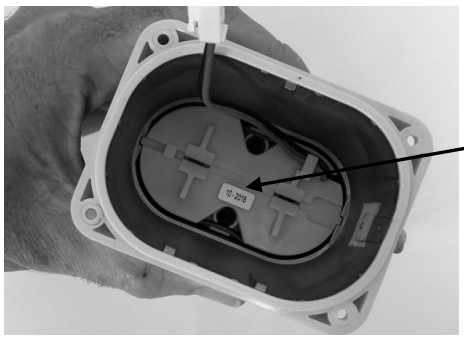
| Step | Action |
|---|---|

| | |
|---|---|
| ⚠ | WARNING: Is imperative that the correct battery service kit be used.<br>• MT400BAT is for use only with 'MT400'<br>• MT401BAT is for use only with 'MT401'<br>• MT403BAT is for use only with 'MT403' |

2. Note down the expiry date (month and year) marked on the top face of the replacement battery pack. You will need this later when marking the battery expiry on the exterior of the beacon.
   Note: Depending on model and or build date of the EPIRB this information is either ink stamped directly onto the battery pack assembly housing or provided as a sticker.




Battery expiry date ink stamping



Battery expiry date sticker

3. Fully discharge the old battery pack and dispose of it in accordance with local regulations

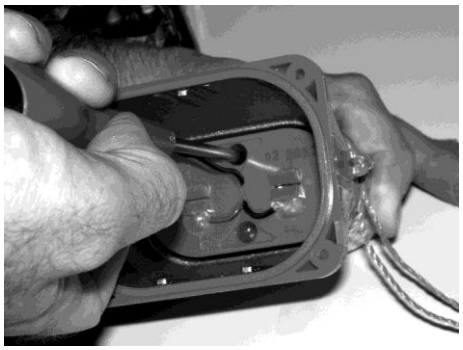
## METHOD 2 (Alternate)

Two different battery types exist, one for the MT400 /MT401 (orange pack) and another for the MT403 (yellow pack), refer to Table 7-3 Schedule of Misc. Replacement Components by EPIRB for ordering details. Ensure that the replacement is of an identical type.

All steps are to be completed in numerical order as follows:

| Step | Action |
|---|---|

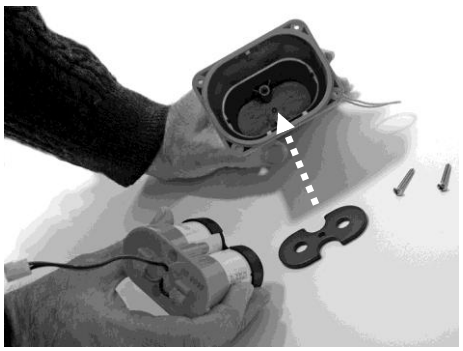
1. Using a Philips driver (Size No.2) undo and remove the two screws which retain the BATTERY PACK in the base of the EPIRB.



2. Remove the fresh battery pack from the plastic shipping bag. Retain this bag for later use.

| | |
|---|---|
| ⚠ | WARNING: Is imperative that the correct battery pack be fitted to the model under service.<br><br>97MT400bat is an 'orange' battery pack comprised of 2 large D cells and is suitable for MT400 and MT401 based beacons.<br><br>97MT403bat is a 'yellow' battery pack assembly that is comprised of housing, 5 battery cell pairs, ballast and a circuit board. This battery pack assembly is for use ONLY on MT403 based beacons. Under no circumstances attempt to fit this pack to MT400/401 beacons. |

3. For the MT400/401 types only, verify that the base ballast weight (loose) is present below where the battery will be fitted.
Note: This ballast weight must NOT be fitted to MT403 based units.

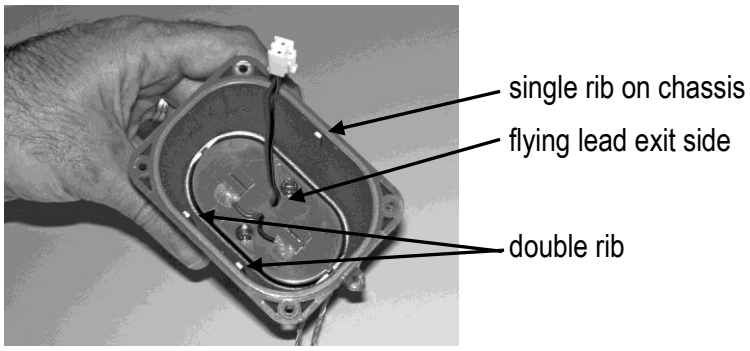


(*Note: MT400/401 series only)*

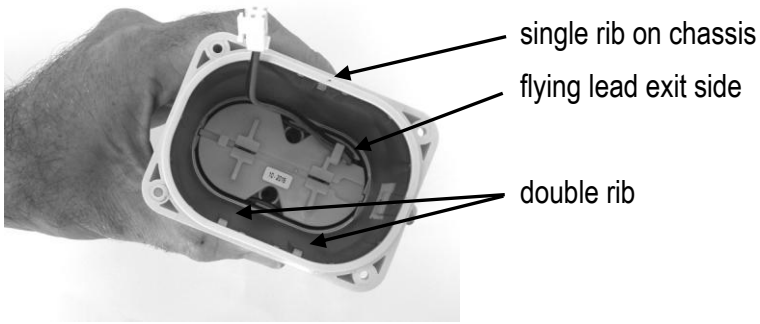
4. Insert a new battery pack orientated as shown in the figure below.

*MT400/401 series:*

**Step Action**

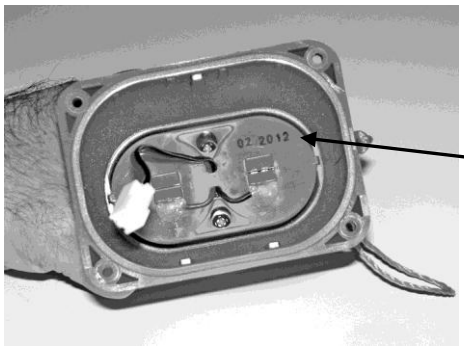
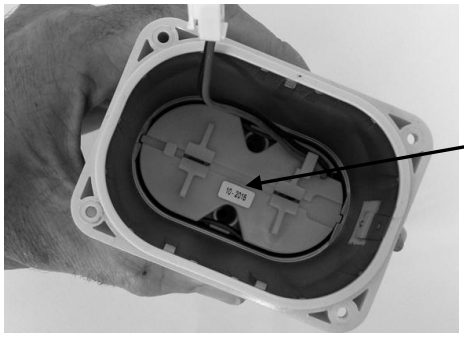



*MT403 series:*




5. Apply firm pressure on the pack to seat it squarely and fully with the base of the EPIRB.

6. Use the two (2) Philips screws previously removed to retain the battery pack in place. Tighten both screws evenly but firmly before torquing both screws tight to 85cNm.
7. Fully discharge the old battery pack and dispose of it in accordance with local regulations
8. Note down the expiry date (month and year) marked on the top face of the newly installed battery pack.
   Note: Depending on model and or build date of the EPIRB this information is either ink stamped directly onto the battery pack assembly housing or provided as a sticker. You will need this later when marking the battery expiry on the exterior of the beacon.

| Step | Action |
|---|---|
| |  Battery expiry date ink stamping |
| |  Battery expiry date sticker |

### 5.3.6 Replacement of Desiccant Sachet

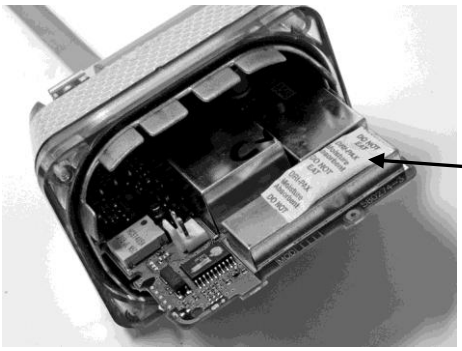
The desiccant sachet must be replaced whenever:

- the beacon has been opened
- if the integrity of the case has been compromised.

All steps are to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Remove the existing desiccant sachet from the PCB exercising care not to tear it (messy). Carefully remove any remnants of the double-sided tape that had previously retained the sachet in place. |
| 2. | WARNING:- The sachet's eventual capacity to absorb moisture within the beacon is compromised if prior to fitment it is exposed to open air for any longer than a few minutes.<br>Remove the desiccant sachet from the sealed bag in which it was provided. |
| 3. | From the rear on the sachet carefully remove the cover strip from the double-sided adhesive strip provided. |
| 4. | At the location shown firmly press the desiccant against the metal screening can, ensuring it makes good contact and is securely retained. |

| Step | Action |
|---|---|




5. IMMEDIATELY reseal the EPIRB (5.3.3), and Leak test (5.3.7) including insertion of the sealing screw.

### 5.3.7 Leak Test

It is vitally important that the integrity of all environmental seals remains in tact. This test is performed where:

- The EPIRB chassis has been opened for access or repair purposes, or
- A beacon's continued performance in this respect is to be verified prior to placing it back into service.

WARNING: All water activated models such as MT401 and MT403 series (including float free variants) will automatically activate and transmit a distress message if placed in water.

Please refer to the necessary precautions detailed below.

It will not normally be possible to complete this test within 60 seconds of first UUT immersion, and thereby on water activated models, reliably avoid the transmission of a false distress alert.

In normal use the manual release and float free housings for these models contain magnet(s) which interact with beacon circuitry to disable water activation when stowed. This feature must be mimicked during the leak test operation.

Suggest approaches, in order of decreasing preference are:

1. Use a leak test fixture, such as that provided within the **Dealer Leak Test Kit P/N MT400DTK** (refer to refer Table 7-4 ), which is equipped with an appropriately positioned defeat magnet.
2. Test the EPIRB in a spare MT401/MT403 manual release mounting bracket (these brackets are identical). Note that float free EPIRB models will need to have their black base plate temporarily removed to be compatible with these mounting brackets [removal and replacement is the same as when programming these types].
3. Alternatively, instead of defeating the water activation circuitry testing could be completed within an RF screened room.

All steps are to be completed in numerical order as follows and assume that a MT400DPK is available:

| Step | Action |
|---|---|

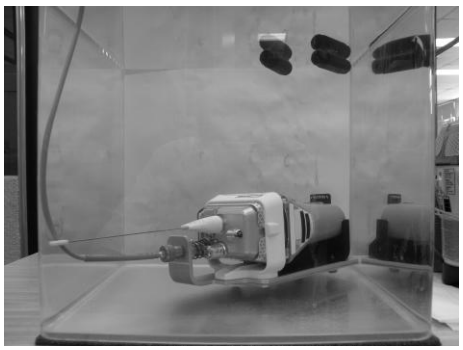
1. Using the dealer leak test fixture, remove activation cover, slide switch and sealing screw then apply dry air at a pressure of 1.0 bar ± 0.1 bar to the leak test hole.

   For operation of the Dealer Leak Test Kit operation refer to the included instructions (Part # 310463).

2.

   WARNING if NOT using Dealer Leak Test Kit: It is necessary that the water activation feature of the UUT first be defeated, for all models so equipped, prior to immersion. Refer to beginning of this section for further advice.

   Completely submerse the UUT in fresh water, and allow for any externally trapped air to surface.



3. Observe for a minimum period of 30s and verify that no air bubbles emanate from the UUT

4. Completely remove the UUT from the water and using compressed air blow clear any water in proximity to the leak test hole.

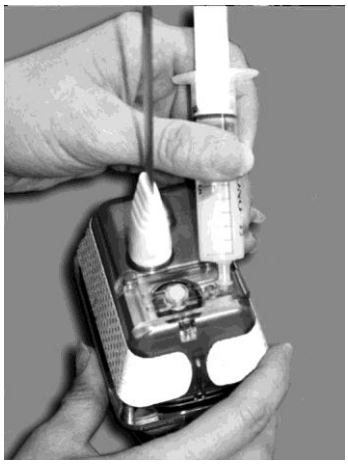
| Step | Action |
|---|---|

5.

| | |
|---|---|
| ⚠ | Use only a neutral cure silicon sealant. |

Apply sufficient (but not excessive) silicon sealer into the leak test hole to promote a good seal.

Immediately insert then tighten the test hole sealing screw to 30cNm torque, before the sealant begins to cure.



6. Fully dry the exterior of the UUT using an absorbent cloth and/or air gun, as required.

   Re-install slide switch and activation cover

### 5.3.8 Security Seal Replacement

A failed or torn Security Seal may lead the owner to question the operational status of the EPIRB. Some repair operations result in destruction of the original seal thereby necessitating it replacement.

Where an EPIRB is returned for assessment and it seal is intact, but in deteriorated condition, it is recommended that a replacement seal be provided to extend its life through to the next inspection.

All steps are to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Clear away all remnants of the previous seal. DO NOT use cleaning products that may attack the plastics. |
| 2. | Carefully place the replacement seal ensuring that the two tabs on the switch mechanism fall within the cut out slot. |
| | |
| 3. | Press down on the seal to ensure good and complete contact with the beacon. |
| 4. | Inspect the seal, if it has torn during installation a new seal must be placed |

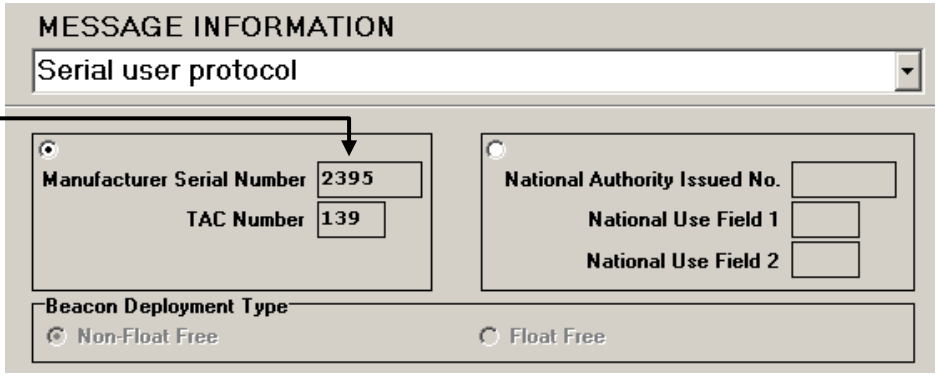
### 5.3.9 Reprogramming User Information

Where the printed circuit board has been replaced, it is necessary to re-enter user preferences and requirements relating to the selected C-S Protocol.

A Dealer Programming kit (P/N MT400DPK) is required for this operation (refer Table 7-4).

NOTE: The serial number (S/N) reported by the programming software directly relates to the S/N of the PCB. By changing the PCB the EPIRB S/N has also changed. If the customer wishes to use the Serial User Protocol with the "Manufacturer Serial Number and TAC" then the beacon fitted with a replacement PCB must be re-registered with the applicable authority.

This number is uniquely determined by the S/N of the PCB fitted within the EPIRB.




### 5.3.10 Ext Labelling Replacement / Update

New external labelling will need to generated:

- If the beacon message programming has changed
- The beacons PCB has been exchanged
- Damaged or weathered labels require replacement
- New batteries have been fitted and the expiry date needs to be updated to reflect this.

The following specialist items are required to complete this operation:

- Dealer Programming kit (P/N MT400DPK),
- brother P-touch 2420 PC (or equivalent) laminated label printer, and
- laminated label stock as applicable to the labels printed.

Follow the operating instructions contained within the kit.

NOTE for USA only:

- If a new chassis is being used it is necessary to apply a NOAA registration label (P/N: 400732) over the heat shrink retaining the lanyard (beacon front activation instruction side).
- Verify FCC ID applicable to model is present on the side of the chassis under the area '**APPROVED BY** COSPAS-SARSAT'. If the FCC ID is not present use the laminated label printer to produce a label of no less than 10pt character height with the FCC ID details. Apply firmly to the rear of the beacon on the unused area between 'WARNING' and manufacturer details.

### 5.3.11 Produce Beacon Record

A Dealer Programming kit (P/N MT400DPK) is required for this operation (refer Table 7-4).

Follow the operating instructions contained within the kit.

### 5.3.12 Transmission Test and Report

All steps are to be completed in numerical order as follows:

| Step | Action |
|---|---|
| 1. | Using a portable beacon tester, or equivalent, verify that the self-test transmission and its content are as expected and details correspond with the external labelling on the beacon and the beacon record produced by the Programming Kit (5.3.11). |
| 2. | Verify the presence and correct operation of the 121.5MHz homing signal and strobe. |
| 3. | For water activated models, and with the beacon removed from it's mounting bracket, momentarily place a load of approximately 1MΩ across the water activation contacts. Verify that this initiates a self-test operation. |
| 4. | Repeat as for 3. above but with the beacon returned to its mounting bracket. Verify that a self-test does NOT occur. |
| 5. | For GPS equipped models take the EPIRB outdoors into a clear open space with good sky visibility. Perform a single GPS self test according to the instructions given within the user instruction manual. |
| 6. | Complete an Emergency Beacon, Inspection Proforma. |

### 5.3.13 Packing for Return to Customer

All steps are to be completed in numerical order as follows:

| Notes | Description |
|---|---|
| 1. | Water activated models should be returned to the customer within the sealable plastic bag included as part the MT400 series battery service kit, if being returned out of bracket. Where this bag is not available another similar sealable bag should be sourced. |
| 2. | The MT400 & MT401 series EPIRB contains lithium battery cells and are classified as Miscellaneous Hazardous Cargo (Class 9) for transport purposes. The nature of the goods must be declared to the organisation responsible for transport/freighting - do not send these EPIRBS through the normal postal service. |

## 5.4 Float Free Housing Service

The Float free housing shipped with some MT401 based EPIRB is expected to remain installed upon the vessel and not usually returned for routine service, other than repair.

Routine service is generally limited to inspection for physical deterioration or damage, and may involve the replacement of the Hydrostatic Release Unit (HRU) and bolt.

If the expiry date of the installed HRU has lapsed then a Float Free Housing Service will need to be performed. This date should be visible on both the housing cover and the HRU itself, and both instances should be verified. Typically legislation requires that the HRU be replaced within two (2) years of entering service (not from the actual date of HRU manufacture). It

may be necessary to verify this period with local or other relevant Authorities that have jurisdiction over the users installation.

Instructions for replacement of the HRU and Bolt are contained within the **Float Free Housing Refurbishment Kit**. It is generally possible to carry out this service in situ without removing the housing from the structure to which it is mounted. Servicing does not require any particular skills or training and can be completed by the owner within 5 minutes.

The Refurbishment Kit and other replacement items are identified within the "Schedule of Items for Service & Repair".

## 5.5 Float Free Product Conversion

MT401/403/403G ["YELLOW"] beacons sold with a manual release bracket can be easily adapted to fully automatic float free operation. The **Float Free MT401 Conversion Kit** contains all the necessary items and full instructions for this operation.

NOTE: Provision is made within the COSPAS-SARSAT protocols to include beacon activation type. Especially where the owner's vessel is under survey, it is advisable to reprogram and relabel the EPIRB accordingly.

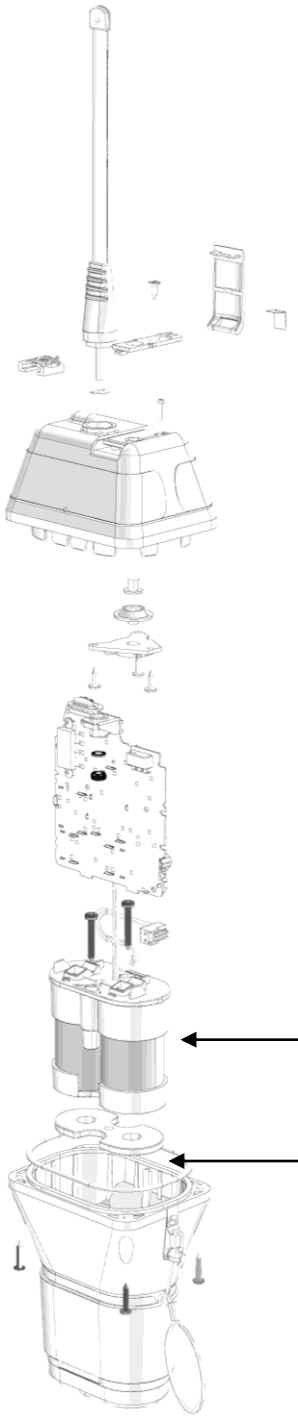
ATTENTION: MT400 ["ORANGE"] beacons CANNOT be converted for automatic float free operation as they are not equipped with a water activation sensor.

NEVER attempt to fit a MT400 into a float free housing. During an emergency it may automatically release and be lost without activating.

NOTE: A very limited number of early MT401 beacons do not possess the keyways necessary to mate with the FF Adapter Plate. To adapt these models for float free operation it is necessary to carefully remove the two (2) corresponding ridges on the FF Adapter Plate. This may be successfully carried out using a scalpel or small side cutters. Under no circumstances attempt to add keyways to the yellow EPIRB housing.

# 6. EXPLODED VIEW OF CONSTRUCTION

## 6.1 MT400/401/403



*Note, MT400/401 battery pack shown.*

*Not present on MT403 model types*

# 7. SCHEDULE OF ITEMS FOR SERVICE & REPAIR

| Product No. | Sales/Order Code | Name / Description | Supply Quantity | MT400 | MT401 | MT401FF | MT403 | MT403G | MT403FF | MT403FG |
|---|---|---|---|---|---|---|---|---|---|---|
| 015773 | MT401FFsvc | Float Free housing service kit | kit services 1 | | | ● | | | ● | ● |
| 015772 | MT401con | Float Free MT401 conversion kit | kit services 1 | | ● | | ● | ● | | |
| 019391 | MT400svc | MT400 battery and EPIRB service kit | kit services 1 | ● | | | | | | |
| 019392 | MT401svc | MT401/FF battery & EPIRB service kit | kit services 1 | | ● | ● | | | | |
| 019393 | MT403svc | MT403/FF battery & EPIRB service kit | kit services 1 | | | | ● | | ● | |
| 019394 | MT403Gsvc | MT403G/FG battery & EPIRB service kit | kit services 1 | | | | | ● | | ● |

**Table 7-1 – Service and Conversion Kits**

| Product No. | Sales/Order Code | Name / Description | Supply Quantity | MT400 | MT401 | MT401FF | MT403 | MT403G | MT403FF | MT403FG |
|---|---|---|---|---|---|---|---|---|---|---|
| 013357 | 61A0355 | Mounting bracket common base | single | ● | ● | | ● | ● | | |
| 013358 | 61A0356 | MT400 - mounting bracket collar | single | ● | | | | | | |
| 014617 | 97MT401MTG | MT401 - mounting bracket collar (c/w magnets for defeat mechanism) | single | | ● | | ● | ● | | |
| 015466 | 97CVR401FF | Replacement Float Free Housing cover (only) assembly (use with existing base)[1] | single | | | ● | | | ● | ● |
| 015467 | 97BSE401FF | Replacement Float Free Housing base (only) assembly (use with existing cover)[1] | single | | | ● | | | ● | ● |
| 014135 | 310209 | Placard 400/401/403/403G | single | ● | ● | | ● | ● | | |
| 015442 | 310336 | Placard 401FF/403FF/403FG | single | | | ● | | | ● | ● |
| 014610 | 310221 | Instruction manual 400/401 | single | ● | ● | | | | | |
| 015472 | 310337 | Instruction manual 401FF | single | | | ● | | | | |
| 018407 | 310424 | Instruction Manual MT403/403G | single | | | | ● | ● | | |
| 017796 | 310406 | Instruction Manual MT403FF/FG | single | | | | | | ● | ● |
| 016593 | 400732 | NOAA 406MHz Registration Label for beacon chassis (USA models only) | single | | | | ● | ● | ● | ● |

**Table 7-2 User Serviceable Items**

[1] Specify if Orange or Yellow latch type.

| Product No. | Sales/Order Code | Name / Description | Supply Quantity | MT400 | MT401 | MT401FF | MT403 | MT403G | MT403FF | MT403FG |
|---|---|---|---|---|---|---|---|---|---|---|
| 015770 | MT400extsw | MT400 external switch service kit | kit services 1 | ● | | | | | | |
| 015768 | MT401extsw | MT401/3 external switch service kit | kit services 1 | | ● | ● | ● | ● | ● | ● |
| 015767 | MT400ant | MT400 series antenna service kit | kit services 1 | ● | ● | ● | ● | ● | ● | ● |
| 015771 | MT400bat | MT400 series battery service kit (c/w lower chassis) | kit services 1 | ● | | | | | | |
| 019395 | MT401bat | MT401 series battery service kit (c/w lower chassis) | kit services 1 | | ● | ● | | | | |
| 018451 | MT403bat | MT403 series battery service kit (c/w lower chassis) | kit services 1 | | | | ● | ● | ● | ● |
| --- | *MT400exPCB*[2] | MT400 Exchange Circuit Module | | ● | | | | | | |
| --- | *MT401exPCB*[2] | MT401 Exchange Circuit Module | | | ● | ● | | | | |
| --- | *MT403exPCB*[2] | MT403 Exchange Circuit Module | | | | | ● | | ● | |
| --- | *MT403GexPC*[2] | MT403G Exchange Circuit Module | | | | | | ● | | ● |
| 015766 | MT401FFblt | HRU bolt c/w SS nuts | kit services 1 | | | ● | | | ● | ● |
| 002106 | 74A4G16PEM | Screws - cap retention | single | ● | ● | ● | ● | ● | ● | ● |
| 013654 | 74A6G25PEM | Screws - battery retention | single | ● | ● | ● | ● | ● | ● | ● |
| 014011 | 74A4G10CEM | Screws - switch ext switch assy | single | ● | ● | ● | ● | ● | ● | ● |
| 009768 | 74A2G10PEM | Screws - leak test hole | single | ● | ● | ● | ● | ● | ● | ● |
| 015173 | 61A0504 | FF Adapter Plate (only) | single | | | ● | | | ● | ● |
| 013366 | 97MT400WND | MT400 lower chassis c/w lanyard | single | ● | | | | | | |
| 014126 | 97MT401WND | MT401 lower chassis c/w lanyard | single | | ● | ● | ● | ● | ● | ● |
| 013333 | 280018 | Lanyard Retention heat shrink tubing | mult of 75mm | ● | ● | ● | ● | ● | ● | ● |
| 014289 | 61A0399 | MT400/401 Cap (only) with reflective tape | single | ● | ● | ● | ● | | ● | |
| 017904 | 61A0694 | MT403G Cap (only) with reflective tape | single | | | | | ● | | ● |
| 013337 | 400563 | Security Label | single | ● | ● | ● | ● | ● | ● | ● |
| 013739 | 46A0441 | Ballast Weight | single | ● | ● | ● | | | | |

**Table 7-3 Schedule of Misc. Replacement Components by EPIRB model**

[2] These items not presently available. PCB Issue and firmware revision constraints apply.

| Product No. | Sales/Order Code | Name / Description | Supply Quantity | MT400 | MT401 | MT401FF | MT403 | MT403G | MT403FF | MT403FG |
|---|---|---|---|---|---|---|---|---|---|---|
| 014484 | MT400DPK | Dealer Programming Kit MT400 Series (c/w software) | single | ● | ● | ● | ● | ● | ● | ● |
| 019160 | MT400DTK | MT400 Dealer Leak Test Kit | single | ● | ● | ● | ● | ● | ● | ● |

**Table 7-4 Test and Programming Tools**